# MISSOURI resources

Winter 2008 • Volume 25 • Number 1

**Inside This Issue!**

# Director's Comment

*As a five-time Gold Medal Award finalist, Missouri's state park system has been recognized as one of the best in the country. Now we have an opportunity to make the best even better – a once-in-a-generation opportunity for Missourians and visitors with the development of a beautiful new state park along the Current River in Shannon County.*

**Natural Resources Director Doyle Childers, Gov. Matt Blunt and Conservation Director John Hoskins visit the future site of Missouri's newest state park.**

*Missouri has not had a state park along the Current River since 1968 when Big Spring, Round Spring and Alley Spring state parks were transferred to the National Parks Service to serve as the cornerstone of the Ozark National Scenic Riverways.*

*I have asked the Department of Natural Resources to work with the Department of Conservation and the Missouri Conservation Commission to explore options to make this new state park a reality. This opportunity is significant because it represents the first major partnership between the departments for the development of a new state park.*

*Located north of Eminence, the site was constructed in the 1930s as a corporate retreat for the Alton Box Board Co. and recently managed by the Department of Conservation as the Presley Outdoor Education Center.*

*The buildings at the site reflect the influence of rustic architecture popular in camp and park buildings in the first half of the 20th century. In fact, the structures recently were placed in the National Register of Historic Places. With its oversight of Missouri's 83 state parks and historic sites, the Department of Natural Resources' mission includes preserving nature and history while providing recreation. After a thorough review, we decided that this area would best serve Missourians as a state park.*

*This land represents a special place that should be preserved for its natural resources, history, archaeological significance and its potential for public recreation. Making the area a state park will ensure that this place will be kept in public ownership for future generations to enjoy.*

*The Alton Box / Presley Outdoor Education Center contains dormitories, a large gym and several historic structures. With its setting along the Current River and surrounding forests, this new state park will provide a wealth of recreational opportunities.*

*The Department of Natural Resources will begin seeking supplemental funding to finance restoration of the buildings and development of the park. As with any new state park, the department will seek public input on its long-term development.*

*More than 16 million people visit our 83 state parks and historic sites each year, and 99 percent of our visitors tell us they are satisfied with their experience. These visitors add $534 million annually to our state's economy. A new state park also would help generate additional economic growth in Shannon County.*

*I appreciate the efforts of the Department of Natural Resources and the Department of Conservation in answering my call to work together to provide Missourians and our state's visitors with a unique recreation opportunity along the Current River.*

Matt Blunt
Governor


MISSOURI resources

Winter 2008
Volume 25 • Number 1




**Mission Statement**
The mission of the Missouri Department of Natural Resources is to protect, preserve and enhance Missouri's natural, cultural and energy resources.


***MISSOURI RESOURCES***
is published three times per year by the Missouri Department of Natural Resources to inform readers about important natural resource issues and how they are being addressed. Any correspondence should be directed to the editor at the Department of Natural Resources, Publications, P. O. Box 176, Jefferson City, MO 65102-0176, or call 1-800-361-4827.
E-mail address: moresdnr@dnr.mo.gov
MoDNR home page: www.dnr.mo.gov

***MISSOURI RESOURCES***
is available in alternative formats.





*Missouri Resources* is printed with soy ink on recycled paper at RR Donnelley, Liberty, Missouri.

PRINTED WITH SOYINK

printed on recycled paper

# table of contents

Missouri Department of Natural Resources



DNR photos by Scott Myers

**Above right:** This sculpture of ragtime pianist and composer, John William "Blind" Boone, stands in Blind Boone Park, Warrensburg.
**Above:** A frosty winter fog rises off the Missouri River in southern Callaway County.
**FRONT COVER:** Slightly ahead of schedule, a woven-wire fence announces winter's return.
**BACK COVER:** On Dec. 11, 2007, the city of Ashland showed the effects of a fierce weekend ice storm.
*Cover photos by Scott Myers.*

GVIP
Gateway Vehicle Inspection Program

# Change is

by Haskins Hobson  photographs by Scott Myers


**(Above) A licensed inspector / mechanic plugs the on-board diagnostic cable into a vehicle's data link connector to conduct a current vehicle emissions test. (Opposite page) St. Louis traffic generates high levels of harmful ground-level ozone each weekday.**

Since early 2000, motorists from the St. Louis area have had their vehicles' emissions tested once every two years at centrally located inspection stations. Last fall, the Missouri Department of Natural Resources phased in a new vehicle emissions testing program at hundreds of decentralized inspection stations throughout the St. Louis ozone nonattainment area. This new program is called the Gateway Vehicle Inspection Program.

## Ozone 101

When you hear the word ozone, do you think of that layer in the atmosphere that blocks harmful sunlight? Or, do you think of the commercials you've seen that advertise products that use ozone to get rid of odors in the air or chemicals in tap water? These examples both portray ozone as a substance that is helpful to human health. However, the ozone that St. Louis area residents are most routinely exposed to each year is not high in the upper atmosphere, or located in their home appliances – it is in the air they breathe, and it is harmful.

Each year, the St. Louis area is monitored for high levels of "ground-level" ozone, a highly corrosive form of oxygen that causes severe lung irritation. The effects of breathing ozone include shortness of breath and chest pain. Ozone also can trigger asthma attacks. These effects are more severe in children, the elderly and people whose lung function has been decreased due to diseases such as emphysema and bronchitis.

The ozone that people breathe is formed when pollution from vehicles, factories, power plants and other smaller sources mix together during hot days with lots of sun and minimal wind. When these conditions exist, area residents are warned through weather forecasts to reduce their exposure to ground-level ozone by limiting their time outside. They also are advised to reduce the activities that contribute to higher levels of ozone formation. By carpooling and refueling vehicles before or after the hottest parts of the day, motorists can reduce pollution in the air that reacts to form ozone.

"Each year, through the efforts of motorists and industry, we continue to see improvements in the St. Louis region's air quality," said Susannah Fuchs, spokesperson for the St. Louis Regional Clean Air Partnership and Director of Environmental Health for the American Lung Association of the Central States. "However, there are still too many days when the region's air quality affects the ability of thousands of people to breathe."

Ten air quality monitors on the Missouri side of the St. Louis region record hourly ozone levels in St. Louis city and St. Louis, St. Charles, Jefferson and Franklin counties. From April until October 2007, seven of the 10 monitors measured violations of the federal health-based, ground-level ozone exposure standard, indicating high ozone exposure levels were widely distributed across the region.

## How Does Emissions Testing Improve Air Quality?

Despite all of the reductions in vehicle pollution levels in the past 30 years, those emissions still are one of the major contributors to ground-level ozone pollution in the

# IN THE AIR


St. Louis area. The number of vehicles and the number of miles driven each day in the St. Louis area have a significant impact on local air quality.

According to the Missouri Department of Revenue registration data, more than one-quarter of the 5.8 million vehicles registered in Missouri are in the St. Louis region. On an average weekday in 2006, 1.7 million passenger vehicles were driven 57.8 million miles. Air quality computer modeling estimates show these vehicles released approximately 250,000 pounds of ozone-forming pollution each weekday in 2006. During the last two years of the previous vehicle emissions testing program, 117,000 vehicles failed the emissions test with at least one emissions-related problem.

The GVIP uses state-of-the-art emissions test methods to evaluate the pollution potential of all passenger vehicles and trucks registered in the area. All 1996 and newer gasoline-powered and 1997 and newer diesel-powered vehicles, 8,500 pounds or less in gross vehicle weight, are tested using the On-Board Diagnostics Generation II test method. This method accesses an advanced computer system installed in these vehicles by the manufacturers to identify those with emissions-related problems and require their repair. Vehicles that are 1995 and older gasoline-powered and 1996 and older


**(Above) Dizzy Mohme, a licensed GVIP inspector at Dobbs Tire and Auto Center, Chesterfield, takes a photo of the test vehicle's identification number. (Above right) Mohme prints out an official vehicle inspection certificate.**

diesel-powered do not have an On-Board Diagnostics Generation II system. Therefore, these vehicles are considered exempt from the emissions testing requirements of the newer vehicles carrying built-in diagnostics systems.

"The Gateway Vehicle Inspection Program is a key component of the ongoing effort to improve air quality in the St. Louis region," according to Leanne Tippett Mosby, deputy director of the Natural Resources' Division of Environmental Quality.

Vehicle emissions testing prevents vehicle pollution by encouraging all motorists to maintain or repair their vehicles prior to their next emissions test. Vehicle emissions testing also reduces the pollution from failing vehicles, once the appropriate repairs are made to them. To keep other vehicles operating as cleanly as possible, the GVIP will test vehicles from Oct. 1, 2007 until at least Sept. 1, 2011.

## A Drive for Convenience

Licensed GVIP stations will perform emissions tests on an estimated 375,000 vehicles each calendar year. Because of these numbers, the most important feature of the new GVIP is the convenience it offers motorists. All GVIP stations have the option to offer emissions testing, safety inspections and vehicle repairs under one roof.

To date, more than 700 licensed inspection stations have signed up to offer emissions testing services. Nearly all of these locations also offer safety inspection services. Motorists can now choose from a large selection of stations throughout the St. Louis area. In addition, they can choose to visit one inspection station and have both inspections performed at the same time.

Vehicle dealerships see this change as a big increase in convenience for their customers. Michael Hecht, Lou Fusz Toyota customer relations and quality control manager, commented that dealerships selling used vehicles will now be able to sell vehicles "with both [emissions and safety] inspections," so motorists won't have to worry about having "to get to the vehicle emissions test station within 10 days or 1,000 miles" of the sale.

GVIP offers motorists the ultimate convenience by allowing them to choose the

type of inspection station they are most comfortable with visiting. Licensed GVIP stations can be test-and-repair stations, such as independent repair facilities or vehicle dealerships, or test-only stations.

Ron Reiling, executive director of the Alliance of Automotive Service Providers of Missouri, described his organization's support for the new GVIP, saying, "It will allow the consumer to have their vehicle tested by an automotive professional that they know and trust."

Bob Jackson, owner of Green Park Automotive, has looked forward to combined safety and emissions inspections. "The Gateway Vehicle Inspection Program is a great change for repair shops and for motorists. The guys in the repair bays just want to do what's best for their customers."

## Consumer Protection Included

The Department of Natural Resources and the Missouri State Highway Patrol are jointly administering the GVIP to ensure motorists receive quality vehicle inspections at all locations. To maintain the integrity of the testing process, the GVIP features many technological innovations.

For example, at the beginning of each emissions test, the On-Board Diagnostics Generation II testing equipment scans the fingerprint of the licensed inspector / mechanic to identify who is performing each test, while cameras document the presence and identity of each vehicle being tested.

The system transmits all passing emissions test results directly to the Department of Revenue. This design allows St. Louis-area license offices to verify all On-Board Diagnostics Generation II test results as soon as the emissions tests are complete. This prevents vehicles being registered with fraudulent emissions test reports.

Hecht likes the electronic data sharing between GVIP stations and the Department of Revenue because it will reduce the amount of paperwork that inspection stations deal with and motorists have to handle on their way to a license office.

## Meeting the Challenge of Change

The GVIP will be a new experience and presents new challenges for both motorists and the vehicle repair industry in the St. Louis area. This program will provide new opportunities for St. Louis motorists and repair technicians to work together to develop better working relations and improve the region's air quality.

Dan Kania, Automotive Division chair at Ranken Technical College, said, "I see the changes in the new program bringing more repair opportunities to the local area shops. In turn, everyone benefits by having cleaner air."

Bob Jackson agreed, saying, "We're in a world of change. Improving vehicle inspections is an ongoing process. But everybody is working toward making the Gateway Vehicle Inspection Program a success."

For more information about the Gateway Vehicle Inspection Program, please visit [www.GatewayVIP.com].

---

*Haskins Hobson is the Inspection / Maintenance team coordinator with the department's Air Pollution Control Program.*


**(Below) Missouri Vehicle Inspection and Gateway Vehicle Inspection program signs in Chesterfield advise motorists that licensed inspectors are available at this inspection station.**

# Funding Fitness

by Erika Jaques
photographs by Scott Myers

Across the United States, the word "epidemic" is often used to describe America's growing obesity problem. Missouri is no exception. As our waistlines expand, so too does the spotlight on this national health problem.

Often cited as a factor in this epidemic is inadequate physical activity. To combat the dual problems of limited physical activity and increasing obesity, solutions are being sought not only through public health organizations, but through other avenues as well. The Missouri Department of Natural Resources' Division of State Parks offers one such opportunity. Through its grant programs for outdoor recreation, the department provides financial assistance to Missouri communities to increase and improve opportunities for physical activity in natural environments.

The division administers two grant programs for outdoor recreation: the Land and Water Conservation Fund and the Recreational Trails Program. "These programs also provide places for families to recreate, and protect green space and wildlife habitat," said Doug Eiken, director of the department's Division of State Parks.

Both are federally funded programs – the LWCF is funded by the National Park Service and the RTP is funded by the Federal Highway Administration. The LWCF funds a broad range of outdoor recreation projects while the RTP, as the name implies, funds trail-related projects.

## The Land and Water Conservation Fund

The Land and Water Conservation Fund has quite an extensive history in the United States. Created in 1965, the program has been funding outdoor recreation projects for more than 40 years. In Missouri alone, this has resulted in more than 1,500 projects totaling more than $69 million in federal funding.

The purpose of the program is twofold – to build and maintain a legacy of high quality recreation areas and facilities across the country, and to encourage non-federal investment in maintaining recreation resources. In Missouri, cities, counties and public school districts can apply for LWCF grants to acquire, develop, or renovate outdoor recreation land or facilities. Project sponsors match a percentage of the total cost of the project, which allows communities to stretch their recreation dollars while meeting community recreational needs and expanding opportunities to engage in physical fitness. LWCF grants have allowed hundreds of communities to acquire parkland, develop facilities such as soccer fields and tennis courts, and renovate deteriorating equipment like playgrounds and swimming pools. Many communities have used LWCF grants to upgrade facilities to comply with the Americans with Disabilities Act. Every county in the state has had at least one LWCF project funded within its boundary.

A unique feature of the LWCF program is its protection provision – otherwise known as the perpetuity requirement. In order to receive a grant, the project sponsor must identify the park acreage to be used in the project and agree to forever maintain that acreage for outdoor recreation purposes. If the sponsor needs to use that designated land for another purpose, the sponsor must replace the land with land of equal value and usage. This ensures no net loss of park land in a community, as well as in the state. The perpetuity requirement is legally binding, which makes the LWCF program a formidable resource for park protection. In addition to the legal perpetuity requirements, any park that has received LWCF funding is required to post a sign acknowledging the LWCF participation. If you look closely at many state parks, state conservation areas and local parks, you will see this sign and will know that the area you are visiting is part of the LWCF legacy in Missouri.

## The Recreational Trails Program

The Recreational Trails Program was enacted into federal law in 1993 through the Symms Act. The Symms Act directs the Secretary of Transportation to allocate money to the states for providing and maintaining trails. The new program sought to use a portion of fuel taxes, collected from off-highway recreation users, for the creation and improvement of recreational trails. The program has been reauthorized by Congress twice since the passage of the Symms Act, once in 1998 and again in 2005.

Under the 2005 reauthorization, Congress approved funding for the program through Fiscal Year 2009.

RTP funds are distributed to the states through a formula based in part on the amount of estimated off-highway fuel tax collected in each state. Missouri's annual apportionment is usually close to $1 million. Under federal law, at least 30 percent of the funding must be used to support motorized trail interests (e.g., all-terrain vehicle trails, off-highway motorcycling trails); the rest may be used for non-motorized trail interests such as hiking, bicycling and equestrian.

Since 1993, Missouri has funded 197 projects of a wide variety, totaling more than

**(Opposite page, left) The Ellis Porter / Riverside Park, part of a citywide greenway in Jefferson City, was funded, in part, by the Recreational Trails Program. (Opposite page, right) A new trail is currently under construction at the park. (Below) The Land and Water Conservation Fund helped provide a hard surface, ropewalk / braille trail, sensory garden, shuffleboard and horseshoe courts, shelter, sculpture and parking lot at Blind Boone Park, Warrensburg.**

## "The RTP grant makes funds available for projects that would otherwise be under-funded or not funded at all."

– J.J. Gates
Jefferson City Parks, Recreation and Forestry Department

**The Recreational Trails Program helped fund a pedestrian and bicycle promenade, as well as two traffic lanes on the Eads Bridge, St. Louis.**

$10 million, but all in relation to the creation or improvement of recreational trails. RTP grants have been extensively used to maintain and renovate legal motorized recreation areas in the state, specifically Finger Lakes State Park, St. Joe State Park and the U.S. Forest Service's Sutton Bluff and Chadwick riding areas. RTP grants have been utilized for equestrian trail renovations at Mark Twain Lake, Jackson County, along the Ozark Trail, and Lake Wappapello. RTP grants have been used to help build networks of bicycle / pedestrian trails in Jefferson City, Springfield, Joplin, Columbia, St. James and numerous other communities both large and small, urban and rural.

J.J. Gates, Park Resources and Forestry division director for Jefferson City Parks, Recreation and Forestry Department, discussed a current project funded through the Recreational Trails Program that would complete a trail network at the Ellis Porter Park. "This trail project will be a part of our greenway system that will eventually link our parks, schools, businesses and neighborhoods together," Gates said. "The RTP grant makes funds available for projects that would otherwise be under-funded or not funded at all."

Each year, the division receives many more applications for outdoor recreation grants than it has funding to support. This indicates a high demand for trails and other outdoor recreation facilities in Missouri. People enjoy the out-of-doors, whether walking along a nature trail, using a local playground, or playing tennis at a city park. As the nation's obesity epidemic grows, the need for communities to provide for these types of physical activities becomes even more important. The Land and Water Conservation Fund and Recreational Trails Program grants are two tools communities can use to provide these resources.

For more information about either the Land and Water Conservation Fund or the Recreational Trails Program, please contact the Department of Natural Resources toll free at 1-800-334-6946 (voice) or 1-800-379-2419 (Telecommunications Device for the Deaf). Information can be requested by e-mail at [moparks@dnr.mo.gov].

---

*Erika Jaques is a former employee for the Department of Natural Resources' Division of State Parks as a planner in the grants management section.*

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

# The State of Missouri's Environment: 2008 UPDATE

by Alice Geller
photographs by Scott Myers

*Protecting Missouri's natural resources is critical to our survival, and it requires a commitment from each one of us. This article provides an update on the progress that was made in 2007 and the work that remains to be done in 2008. More detailed information about Missouri's natural resources, our energy supply, our historic preservation efforts and our state parks can be found in* The State of Missouri's Environment: 2007, *which can be found online at [www.dnr.mo.gov/pubs/pub1332.pdf]. A limited number of copies also are available by calling 1-800-361-4287. To help our citizens continue to track Missouri's environmental progress, the department is in the process of compiling another full report to be released in January 2009.*

Doyle Childers,
*Director, Missouri Department of Natural Resources*

| DNR Full-Time Employees by Division | FY2008 |
|---|---|
| State Parks | 732 |
| Environmental Quality | 481 |
| Field Services | 315 |
| Operations | 101 |
| Geology and Land Survey | 72 |
| Soil and Water Conservation | 55 |
| Water Resources Center | 27 |
| Energy Center | 24 |
| Misc. * | 22 |
| **Department Total** | **1,829** |

*Misc.* Includes: Agency-wide, petroleum activities staff, Petroleum Storage Tank Insurance fund staff and Homeland Security staff.*

## Efficiency, Process and Accessibility Improvements

Permit Assistant – By using Permit Assistant, implemented in June 2007, anyone with access to the Web may answer a series of questions to determine which permits or registrations their businesses will need. Permit Assistant then provides links to the appropriate forms.

Ombudsmen – Our ombudsmen played a significant role in the success of the End-of-Life Vehicle Solutions Program by personally visiting 152 salvage operations and used-car lots to encourage participation. They also visited 82 communities to remind them that they received training vouchers for their drinking water system operators; helped promote the department's Tire Dump Roundup Program; and arranged 92 town meetings across the state to learn more about the financial and environmental challenges facing our communities

Land Survey Index – Visitors to the new Land Survey Index Web site are able to search and order any of the 1.3 million survey documents available in the Land Survey Repository. These documents play an extremely important part in the determination of land boundaries.

Compliance assistance – Environmental Assistance Visits are a new component of the department's compliance assistance efforts – designed to help businesses, communities and citizens prevent spills, leaks and other hazards from occurring. Because the visits are not formal inspections, compliance assistance is provided with the expectation that corrections will be made if problems are discovered. However, formal enforcement actions may be initiated if serious violations are found. Serious violations are those that are immediately or imminently harmful to human health or the environment, such as a hazardous waste release.

Environmental Assistance Visits became standard practice in January 2006 for the Department of Natural Resources. During FY 2007, staff conducted more than 4,400 EAVs. Department staff visited land disturbance sites, facilities recently receiving drinking water and air permits, limestone quarries and hazardous waste generators. The department walked permittees through their unique permit requirements and provided compliance assistance rather than conducting formal inspections.

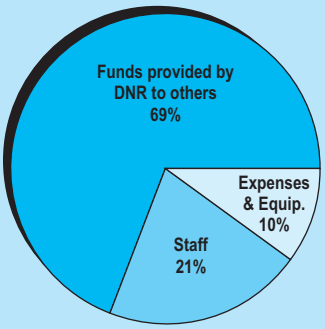
In a survey conducted by the department's ombudsmen, nearly 99 percent of respondents reported that they felt well served by staff who visited their operations during EAVs.

E-forms – The department provides e-forms on the Web. The dry cleaner registration, application to open burn vegetation, petroleum storage tank registration, sewer extensions and land disturbance permits for sites less than 5 acres area are among the first available forms in an initiative to move more applications and reports online.

Planned enhancements will enable applicants to submit many of the more commonly used permit applications online.

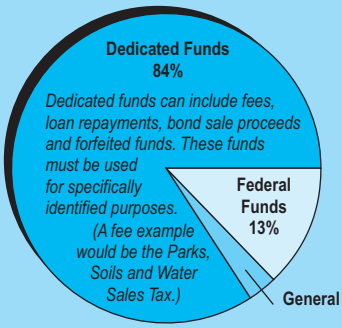
Submitting applications online can decrease the number of calculation errors, as the system completes the applications automatically.

Each year, the department receives approximately 32,000 requests for permits, licenses, registrations or certificates. Of those, about 79 percent appear to be good candidates for automated application.




## FY2008 DNR Operating Budget

| | |
|---|---|
| Funds provided by DNR to others such as the State Revolving Loan funds | $224,856,390 |
| Staff (1,829 people) | $68,655,993 |
| Expenses & equipment | $32,051,837 |
| **TOTAL** | **$325,564,220** |




## FY2008 DNR Source of Funds

| | |
|---|---|
| General Revenue | $10,144,894 |
| Federal Funds | $43,243,524 |
| Dedicated Funds | $272,175,802 |
| **TOTAL** | **$325,564,220** |

# Our Water Resources

**Financial Assistance from Water Protection Program**

| LOANS AWARDED | FY2007 |
|---|---|
| Construction of public & animal wastewater facilities | $66,301,489 |
| Rural water, sewer & other | $882,484 |
| Construction of drinking water systems | $14,100,000 |
| **GRANTS AWARDED** | |
| Storm water control | $2,956,391 |
| Forty Percent Grants | $1,892,380 |
| Rural water, sewer & other | $2,795,845 |

These programs saved communities $28,576,011 in interest in 2007.

## Progress on Challenges

Aging infrastructure – Gov. Blunt approved $50 million in water pollution control bonds in 2007 targeted to construction grants for wastewater systems covering 40 percent of the construction cost; issued grants for rural and special needs communities; for wastewater and drinking water; and direct loans for wastewater and drinking water projects.

Water quantity and quality – A priority need in Missouri is information on our stream and groundwater resources through a monitoring network. Currently, the amount of water available to Missourians versus the amount used is not completely known. In 2007, $1.6 million was added for water resource assessment and monitoring.

Mercury pollution – Salvage yards in Missouri have recovered 12,329 mercury switches from scrap vehicles. Missouri ranks ninth out of 48 states participating in the End-of-Life Vehicle Solutions Program.

Total Daily Maximum Load studies – Twenty-nine TMDLs are scheduled for work during 2007, varying from modeling, permitting, public comment and completion. TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its quality is affected. Its main objective is to restore and protect water quality in our streams, rivers and lakes. Missouri has established acceptable standards for drinking water and other designated uses. Waters that don't meet these standards are placed on what is called the 303(d) list.

| Compliance performance for permitted wastewater facilities, wells and drinking water facilities in FY2007 | |
|---|---|
| Regulated facilities | 19,789 |
| Environmental Assistance Visits | 2,952 |
| Inspections | 5,813 |
| Letters of warning | 457 |
| Notices of violation | 1,063 |
| Settlement agreements | 19 |
| AGO referrals | 168 |

94.2% of Missourians served by community water systems received drinking water that met all health-based standards. 76% of wastewater facilities were in compliance in 2007 (63% in 2006). Environmental Assistance Visits increased from 303 in 2006 to 2,952 in 2007.

# Our Energy Resources

DNR intervened in Public Service Commission proceedings for energy-efficiency programs for utility customers. These funds were approved or stipulated by PSC orders to be provided in the years indicated.

| | REGULATORY CASES | DEVOTED DOLLARS | CLIENTS SERVED |
|---|---|---|---|
| FY08 | 12 | $20,363,632 | 54,741 |
| FY09 | 13 | $20,749,003 | 60,894 |
| FY10 | 14 | $22,678,804 | 69,325 |

**Grants and Loans Provided for Energy Conservation Projects**

| | FY2007 |
|---|---|
| Low-income weatherization | $7,285,383 |
| School & local government loans | $9,435,811 |
| Biodiesel credits | $181,167 |

## Progress on Challenges

Missouri's energy consumption and renewable resources – Each Missourian uses an average equivalent of 56 barrels (2,332 gallons) of petroleum in a year. The total energy bills paid by all Missourians each year is approximately $16.4 billion. Much of this money leaves the state because more than 95 percent of conventional fuels we consume (coal, petroleum and natural gas) come from outside Missouri.

Missouri's first wind farm near King City began production in 2007. Two additional wind farms are under construction, one between Rockport and Tarkio and another near Conception in Nodaway County. Upon completion, they will bring the total to 156 megawatts of electricity from wind generation in the state – enough energy to power nearly 45,000 homes.

# Our Soil Resources

**Financial Assistance from the Soil and Water Conservation Program**

| | FY2007 |
|---|---|
| Requests processed | 7,184 |
| Funds provided | $31,772,970 |

## Progress on Challenges

Continued funding for the state park system and soil conservation efforts – In 2006, Missouri voters approved a 10-year extension of the Parks, Soils and Water Sales Tax by a 70.8 percent majority.

# Preserving Our State Parks and Historic Sites

Number of Sites: 83 state parks and historic sites and the Roger Pryor Pioneer Backcountry. A new park along the Current River will be added to the system in 2008. The property formerly known as the Alton Club / Jerry J. Presley Conservation Education Center is currently under the oversight of the Department of Conservation and will be transferred to the Department of Natural Resources. Although not yet open to the public, the department is seeking public input to assist in developing plans.

**Number of Acres: 141,295 acres in parks and sites and 61,000 acres in Roger Pryor Pioneer Backcountry**

**Number of visitors in FY 2007: 16,069,467**

## Progress on Challenges

Johnson's Shut-Ins State Park redevelopment – A series of public meetings was held to gather input on the new state park design. The shut-ins themselves were open for swimming for the summer months of 2007.

Looking forward and efficiencies – To meet the demand of new services with limited resources, the division has begun a process to identify future challenges and how to meet them. One efficiency that came out of this "visioning" process was to establish a historic construction crew that has specialized preservation skills and can repair historic buildings in a more timely and cost-effective manner than outside contractors. Another efficiency was the development of an online reservation system to make it easier to reserve tours of the State Capitol.

# Clean Air

| Compliance performance for asbestos, open burning permits and air permitted facilities in FY2007 | |
|---|---|
| Regulated facilities | 4,900 |
| Environmental Assistance Visits | 500 |
| Inspections | 5,132 |
| Letters of warning | 188 |
| Notices of violation | 402 |
| Settlement agreements | 157 |
| AGO referrals | 30 |

96% of permitted facilities were in compliance in 2007 (was 95% in 2006), as were 83% of asbestos permits. Environmental Assistance Visits increased from 51 in 2006 to 500 in 2007.

## Progress on Challenges

Doe Run Company, Herculaneum – In 2007, the department and Doe Run signed a revision to the Herculaneum Lead State Implementation Plan to require additional emission controls, work practices and other improvements. A July 13, 2007, explosion and fire damaged the smelter, although pollution control equipment did not appear to be damaged. Before the fire and explosion, the smelter continued to violate the national ambient air standard for lead. More than 20 emission control projects are underway and are to be completed by April 2008.

Objectionable odors – The department formed a workgroup of those affected by odors, industry, environmental interests and other governmental units, to review current odor regulations to determine if changes are needed. This was in response to a petition to the department regarding concerns expressed by others about the regulations. Rule changes are being considered by the Missouri Air Conservation Commission.

Improving air quality in St. Louis and Kansas City – In 2007, St. Louis was in nonattainment for ozone while Kansas City had two ozone violations of the federal standard. In St. Louis, the Gateway Vehicle Inspection Program began in October 2007. This is a decentralization of the vehicle emissions testing required to attempt to bring St. Louis back into compliance with federal ozone standards. By November 2007, more than 500 stations will be licensed to conduct the emissions testing.

# Our Land

| Compliance for hazardous waste and underground storage tank facilities, hazardous waste transporters and PCB permitted facilities in FY2007 | |
|---|---|
| Regulated facilities | 8,779 |
| Environmental Assistance Visits | 656 |
| Inspections | 363 |
| Letters of warning | 29 |
| Notices of violation | 53 |
| Settlement agreements | 32 |
| AGO referrals | 27 |

In 2007, 94% of facilities handling hazardous waste were in compliance, as were 27% of underground storage tanks (program not funded in 2006 and only enforcement inspections in 2007) 76% of Missouri's transporters of hazardous waste and 93% of facilities handling PCBs were in compliance. Environmental Assistance Visits increased by 485 in 2007.

## Progress on Challenges

Federal Underground Storage Tank requirements – The Energy Policy Act of 2005 contained provisions for the UST Compliance Act. This new law significantly affects the federal underground storage tank program, requires major changes to our state program and presents new challenges to underground storage tank owners, petroleum marketers, manufacturers, installers and federal facilities in the state.

Missouri convened stakeholders to develop rules to implement these new federal requirements. The UST provisions of the Energy Policy Act focus on preventing releases.

Lead and zinc mining inventory – The department and EPA are conducting investigations of the Old Lead Belt (south of the Missouri River in eastern Missouri), the Central Mining District (central Missouri south of the river) and the Tri-State Mining District (southwest Missouri). Three areas in the Old Lead Belt are significantly contaminated and are subject to response actions to replace soil in yards and provide clean drinking water to affected citizens.

These areas were proposed for the National Priorities List. An additional investigation is continuing.

## Solid Waste

E-Scrap – The E-Scrap Workgroup, composed of industry, consumers, recyclers and retailers, developed e-Cycle Missouri, a voluntary, tiered-registration approach and information campaign for recycling and reuse of electronics.

| Compliance performance for solid waste landfills, processing and scrap tire facilities and non-permitted entities such as scrap tire haulers in FY2007 | |
|---|---|
| Regulated facilities | 301 |
| Environmental Assistance Visits | 372 |
| Inspections | 806 |
| Letters of warning | 136 |
| Notices of violation | 47 |
| Settlement agreements | 85 |
| AGO referrals | 2 |

92% of solid waste landfills and 96% of solid waste processing facilities were in compliance in 2007. Environmental Assistance Visits increased from 64 in 2006 to 372 in 2007.

## Progress on Challenges

General disposal, recycling and reuse of solid waste – In 2005, the General Assembly reinstated the Scrap Tire Fee. Between 2006 and 2007, more than 1.7 million scrap tires were cleaned up, including the largest scrap tire site in Missouri, the Bishop Scrap Tire Site. Located in Cass County, it was the largest remaining tire dump in the state. The site, almost 30 years old, contained more than 800,000 tires.

## Land Reclamation

| Compliance performance for industrial minerals and metallic minerals permitees and active coal mining in FY2007 | |
|---|---|
| Regulated facilities | 872 |
| Environmental Assistance Visits | 50 |
| Inspections | 277 |
| Letters of warning | 45 |
| Notices of violation | 2 |
| Settlement agreements | 0 |
| AGO referrals | 0 |

In 2007, there were 230,311 surface-mined acres in Missouri, either actively being mined or abandoned mined land. In 2007, 103,045 cumulative acres of mined land had been reclaimed.

## Progress on Challenges

Mineral extraction – In 2007, the General Assembly passed Senate Bill 54, which created the Geologic Resources Fee and the Geologic Resources Fund for additional programs and services for the industrial mining community. It also created the Industrial Minerals Advisory Council to oversee the fund and its uses.

# Historic Preservation

## Progress on Challenges

Funding to maintain buildings – The Missouri Heritage Properties Program was established in the summer of 2007. It will support preservation of publicly owned facilities that are not eligible for other assistance programs, such as the historic preservation tax credits. During the first grant cycle, priority will be given to the preservation of Missouri's historic county courthouses. The first round of funding in November 2007 made $500,000 available in grants. Currently, 57 county courthouses are listed on the National Historic Register.

Identify and evaluate historic resources – In 2007, the department evaluated 850 individual resources for the National Historic Register. The department also identified or evaluated 4,071 historic, architectural or archaeological resources. Certified local governments were awarded $72,382 through the federal Historic Preservation Fund.

---

*Alice Geller is deputy director of the Missouri Department of Natural Resources' Field Services Division.*

DNR photo by Scott Myers

**Department Director Doyle Childers signs the Taum Sauk consent judgment with Division of State Parks Director Doug Eiken.**

## Taum Sauk Breach Settlement Reached

The State of Missouri has reached a settlement with AmerenUE over the collapse of the St. Louis utility company's Taum Sauk Reservoir. Termed "The worst man-made disaster in the history of Missouri," by Gov. Matt Blunt, the settlement compensates the people of Reynolds County and the State of Missouri for the loss of natural resources and recreation associated with the Taum Sauk disaster.

The governor said he was glad he and other state officials have reached this settlement. Attorney General Jay Nixon insisted that the Department of Natural Resources give up their right to appeal if a circuit court does not approve the terms, an action that could jeopardize the settlement.

On Dec. 14, 2005, the breach sent 1.3 billion gallons of water through the main-use area of Johnson's Shut-Ins State Park, injuring the park superintendent and his family, destroying the park and impacting the East Fork of the Black River and the lower Taum Sauk Reservoir.

The agreement, signed by representatives from the Missouri Department of Natural Resources, the Missouri Department of Conservation, the Missouri Attorney General's Office and AmerenUE will be entered as a consent judgment in the Circuit Court of Reynolds County and represents a total package of over $179,750,000. This amount includes $51 million AmerenUE has already spent cleaning up the park and river, consistent with numerous orders and directives from the department, and over $2 million in oversight costs already paid by AmerenUE to the department for time spent by staff in responding to the event.

"While some of Missouri's treasures were lost forever in the Ameren Taum Sauk disaster," said Gov. Blunt, "this settlement will help our state move forward with new natural resources and recreational opportunities for Missourians to enjoy for generations to come."

## Permit Assistant Wins National Award

Gov. Matt Blunt has praised the Missouri Department of Natural Resources for answering his charge to apply available technology to improve customer service. The department has received national recognition for their innovative and user-friendly Internet program, called Permit Assistant.

"We continue to make state government services more accessible and easy to use and I applaud the Department of Natural Resources for answering my call to make it easier than ever before for Missouri's businesses and communities to protect our natural resources," Blunt said.

The Environmental Council of the States, a national non-profit, non-partisan association of state and territorial environmental agency leaders, awarded the department with the Best State Innovation Award for Permit Assistant. The program helps those seeking permits by making information easily accessible on the department's Internet site. Permit Assistant is available at [www.dnr.mo.gov/mopermitassistant/].

"States have stepped up to solve many of the nation's environmental problems, such as climate issues, control of new contaminants and air quality," said Steve Brown, executive director of the Environmental Council of the States. "Missouri's Permit Assistant is yet another fine example of state leadership."

The department developed the program in coordination with the Information Technology Services Division in the Office of Administration and tested the application online with customers and focus groups.

"This reflects the governor's and the department's way of doing business, with an increased emphasis on customer service and bringing departmental resources closer to the citizens we serve," said Natural Resources Director Doyle Childers.

## Geological Survey Program Commended

The Department of Natural Resources' Division of Geology and Land Survey, Geological Survey Program has received a commendation from the Kansas City / Omaha Section of the Association of Environmental and Engineering Geologists.

Mimi Garstang, state geologist and director of the division accepted the award. The citation said, in part, "During the 40-year history of the KC / Omaha Section, the Missouri Geological Survey has consistently provided sound geological information to many of our members and this organization. The information has come from the

survey's many fine publications and from personal communication with survey geologists."

Department Director Doyle Childers said that state geological surveys are invaluable assets to the citizens of our state and to industry professionals. The Missouri Geological Survey is in its 155th year of service.

The division offers educational posters, maps, trading cards and a wide variety of publications. The publications desk in Rolla can be reached by calling (573) 368-2125 or 1-800-361-4827, or visit them on the Web at [www.dnr.mo.gov/geology].

### Assistance Program Heads Off Problems

Missouri Department of Natural Resources field staff throughout the state completed more than 5,800 Environmental Assistance Visits, as the program approached its second anniversary in late 2007.

Environmental Assistance Visits are a free service provided to businesses, municipalities and other facilities regulated by the department. During an Environmental Assistance Visit, a field staff member meets with a facility owner or manager to improve understanding of environmental rules that affect the facility.

Through November 2007, department staff conducted 6,437 visits to facilities operating under a number of different permits, including air, hazardous waste, drinking water, wastewater and solid waste. An Environmental Assistance Visit differs from an inspection in several ways. It is voluntary, always scheduled and focuses on understanding the permit rather than simply checking for compliance. Department inspectors go over the permit requirements, view operations and provide feedback, guidance documents and other helpful information. Department staff also provide training about required sampling, record keeping, operations and maintenance, if necessary. Areas where the facility has good performance, as well as areas of concern, are discussed.

Because the visit is not a formal inspection, compliance assistance is provided with the expectation that corrections will be made if any problems are discovered. No enforcement consequences are initiated during an Environmental Assistance Visit unless the facility has very serious violations.

## environmental notes

### Bottled Water Tapped Out?

Water comprises almost 70 percent of our body weight and is critical to vital functions, but Americans are now thirsty for what has become the healthiest and most expensive water on the planet. Our 2006 consumption of bottled water was 27.6 gallons per person, up from 16.7 gallons per person in 2000 and 1.6 gallons per person in 1976, according to the International Bottled Water Association. But this country has some of the best public water supplies in the world. Instead of spending $15 billion each year on bottled water – according to *Beverage Digest* – and consuming four billion gallons of water a year in individual-sized bottles, many are beginning to wonder what all those bottles are doing to human health and the environment.

Drinking water is a good thing and nearly all municipal water in America is good to drink. It is surprising that the U.S. imports bottled water from as far away as Italy, France and the Fiji Islands. A person drinking the recommended eight glasses a day from bottled water, could spend up to $1,400 annually. The same amount of tap water would cost about 49 cents. As we began to opt out of drinking tap water, there is less public and political support for protecting and maintaining America's public water supplies. This would be hazardously ironic – access to cheap, clean water is basic to our nation's health.

Some local governments have begun to challenge the notion that "bottled is better." Consumers are being told to boot the bottle and turn on their taps. City mayors in San Francisco, Salt Lake City and Minneapolis have called for a national study to examine the environmental impact that empty water bottles have on municipal garbage operations. It is estimated that in 2005, 52 billion plastic bottles and jugs went to landfills, were burned or became litter – 60 million containers per day. Mayors in San Francisco and Los Angeles also have issued executive orders prohibiting the use of city money to buy bottled water.

Bottled water requires fossil fuels to make polyethylene terephthalate (PET) bottles and to transport them long distances in fuel-burning trucks, while tap water uses existing systems for delivery. According to the Earth Policy Institute, it takes 1.5 million barrels of oil annually – enough to fuel about 100,000 cars for a year – to make a year's worth of plastic water bottles. Then it takes 1,000 years for the empties to biodegrade in landfills, because that's where most of them end up.

University of Missouri-Columbia researcher Frederick vom Saal, a professor of reproductive biology and neurobiology, has spent years studying bisphenol-A and its effects on laboratory animals. Although valuable for making plastic containers, research has shown bisphenol-A leaches from food containers in small doses that increase over time and after the container has been heated. Traces of bisphenol-A have been found in nearly every American tested for it and tests on laboratory animals found it produces a long list of ailments. The research has remained controversial, however, with industry groups contending that bisphenol-A is safe.

Bottled or tap?

Detailed information about the department's procedures for Environmental Assistance Visits is available in its Field Services Division Operations Manual, available online at [www.dnr.mo.gov/services/opsmanual.htm].

## Brownfield Program Rebuilds Communities

In 2006, the Missouri Environmental Improvement and Energy Resources Authority established the Brownfield Revolving Loan Program to assist communities in the cleanup of sites contaminated with petroleum and hazardous wastes.

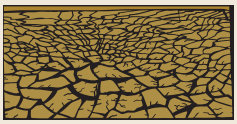

EIERA was awarded a $1 million grant from the U.S. Environmental Protection Agency to develop the revolving loan program and to target small and rural communities. However, the low-cost loans are available to any private or public entity, except state agencies.

This is an "open" application process, there is no annual or fiscal year deadline. The revolving loan program is particularly attractive to communities that have vacant buildings, abandoned gasoline stations or vacant lots. City officials and community leaders can use the loan assistance to restore and redevelop those blighted areas into productive commercial entities.

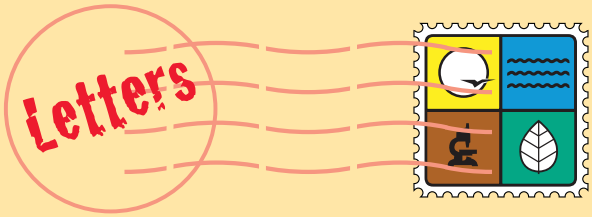
For more information or to obtain an application, contact the EIERA / Missouri Brownfield Revolving Loan Fund at (573) 751-4919 or visit EIERA's Web site at [www.dnr.mo.gov/eiera].

## Drought Relief Approved by U.S.D.A.

Gov. Matt Blunt announced in November that the



Letters intended for publication should be addressed to "Letters," *Missouri Resources,* P.O. Box 176, Jefferson City, MO 65102-0176 or faxed to (573) 522-6262, attention: "Letters." Please include your name, address and daytime phone number. Space may require us to edit your letter. You also can e-mail *Missouri Resources* staff at moresdnr@dnr.mo.gov




I thoroughly enjoy your *Missouri Resources* magazine — excellent publication and I hope they continue forever! Reference your recent article relative to use of compact fluorescent bulbs. An electrical engineer acquaintance mentioned recently that there could be a hazmat cleanup problem in a residence in the event of an accidental break of one of the CFLs from the mercury involved. Is this a potential problem? We have used one kitchen light fixture for years which is a fluorescent circular design and never have given a thought about a hazmat cleanup if broken!

We did purchase a two-pack of the CFLs at Wal-Mart sometime back and one of them failed after about two weeks. The two pack cost was approximately $7.00. The other one is still in use and is working okay. I think our purchase was from an older style and the illumination is not quite satisfactory for the rated wattage. They were made in China of course. Do you have a suggestion on which brand is best?

Gerald Cross
Park Hills

Editor's Note:

*The following Web site may answer most questions on CFL disposal and includes a link to the EPA's Energy Star Web site [earth911.org/mercury/]. It appears that the mercury danger is not in a few home-use CFLs, but rather in the collection of large numbers of the bulbs. Since CFL bulbs contain only trace amounts of mercury, there is not a risk to individuals. Breakage during the disposal of many bulbs could be hazardous, however. Recycling seems to be the best option. There are two main parts to a CFL: the gas-filled bulb or burner and the magnetic or electronic ballast. Both are subject to failure from normal use. The best CFLs can last 15,000 hours, but such lifetimes may cost more.*

The Department of Natural Resources needs to put its money where its mouth is. The Fall 2007 *Missouri Resources* arrived the day before heading to Bennett Spring State Park for some relaxation and trout fishing. After reading the article on page 15 entitled, "Compact Fluorescent vs. Incandescent," describing the benefits of the CFL lights versus incandescents, I made note of the fact that none of the restroom facilities at the state park have been converted to the more energy-efficient CFLs. I don't know the status at the rest of Missouri's state parks and historic sites but if it is the same, a sizable opportunity to reduce energy costs has been missed.

Bill Ward
St. Peters

Editor's Note:

*In this age of increasing energy costs, the department's Division of State Parks is exploring opportunities for greater energy efficiency, and converting to compact fluorescent lights (CFLs) is one such opportunity. Unfortunately, with 83 state parks and historic sites, it is cost-prohibitive for the state park system to implement a system-wide conversion from incandescent to CFLs. As incandescent bulbs burn out, however, state parks and historic sites replace them with CFLs where appropriate. Energy efficiency continues to be a top priority for the division, which is why it has been working closely with Energy Center staff to identify improvements and implement energy efficiencies (see* Career Connection *on page 23).*

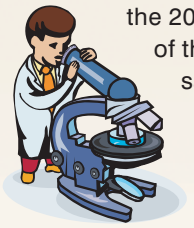
U.S. Department of Agriculture Acting Secretary Chuck Connor declared 22 Missouri counties as natural disaster areas for agricultural loss due to drought-related damages. Eight additional counties were named as contiguous disaster counties and will also be eligible for disaster designation.

Counties approved for declaration of natural disaster areas are Bollinger, Butler, Cape Girardeau, Carter, Dunklin, Howell, Iron, Jefferson, Madison, Mississippi, New Madrid, Oregon, Pemiscot, Perry, Reynolds, Ripley, St. Francois, Ste. Genevieve, Scott, Stoddard, Washington and Wayne. The contiguous counties include Crawford, Dent, Douglas, Franklin, Ozark, Shannon, St. Louis and Texas. The disaster declaration in both primary and contiguous counties makes farm operators eligible for low-interest loans from Missouri Farm Service agencies if eligibility requirements are met.

Livestock producers suffering from diminishing forage are encouraged to visit the Missouri Hay Directory at [www.mda.mo.gov] or call the Missouri Department of Agriculture's hay hotline at 1-800-877-4429.

For current information on drought conditions, check the Missouri Department of Natural Resources' Web page at [www.dnr.mo.gov/env/wrc/droughtupdate.htm].

## No E. Coli Detected in Final 2007 Test



The final round of testing for the 2007 season at the Lake of the Ozarks found all 57 samples well within the E. coli bacteria standard for swimming and other whole body contact recreation.

The test samples, the sixth of monthly samplings that began in May, were taken Oct. 9, 2007. Of the 356 samples taken during the season, only eight exceeded the standard for the E. coli bacteria. The same 57 sites were tested in June and August.

The Department of Natural Resources, in partnership with the Department of Conservation, AmerenUE and the Lake of the Ozarks Watershed Alliance, tested 28 coves from Bagnell Dam to the Community Bridge. Alliance volunteers trained to do such sampling nearly doubled the number of sites that could be sampled.

The sampling protocol was arranged so that the 14 odd-numbered coves were sampled in odd-numbered months, and the remaining even-numbered coves were sampled in even-numbered months. The testing will resume this May, focusing on a new series of coves.

AmerenUE is paying $15,000 per year for the five-year study. When completed, the water testing will include coves from Bagnell Dam to Truman Dam.

E. coli is a bacteria found in the intestinal tract of warm-blooded animals. Frequently associated with faulty sep-

## Stream Team Notebook

### Dedicating a Decade to Water Quality

The Department of Natural Resources has presented a Dedicating a Decade Award to David McCoy and Jim Reed. For the past 10 years, these two water quality volunteers monitored water quality in White Aloe Creek, Platte County, four times a year, with the exception of one quarter.

Photo by Don Smith, Parkville

**Jim Reed and Pat Harris rescue a large carp after flooding in May 2007. Reed and other members of Stream Team #907 rescued several fish that had been trapped in White Aloe Creek.**

Reed is the director of the Parkville Nature Sanctuary and McCoy works for Missouri Power and Light. Over the past decade, they have held stream litter collections, conducted coloring contests and monitored more than 1,000 hours for the Volunteer Water Quality Monitoring Program. Through the nature sanctuary, Reed and McCoy are able to involve many students and citizens in the monitoring efforts.

One of the more interesting experiences the team has had, involved large carp that were carried over the Riss Lake dam and into White Aloe Creek, in the nature sanctuary, during flooding in May 2007. Reed organized an effort to save the fish by transporting them to a larger body of water. Each of the fish weighed between 10 and 20 pounds.

The Dedicating a Decade Award is presented to Volunteer Water Quality Monitors who have monitored and submitted data for at least 10 years. McCoy and Reed have monitored White Aloe Creek since 1997.

The Stream Team Program is a cooperative effort between the Missouri Department of Natural Resources, the Missouri Department of Conservation and the Conservation Federation of Missouri. For information about the Stream Team Program, visit [www.dnr.mo.gov/env/wpp/VWQM.htm] or [www.mostreamteam.org].

MISSOURI STREAM TEAM

# Time Exposures

**Ha Ha Tonka mansion, now part of a popular state park, was once the crown jewel of the 5,000-acre estate of Robert M. Snyder, Kansas City. Construction began in 1905, but Snyder died in one of Missouri's first automobile accidents. His sons finished the massive stone building, but tragedy struck again in 1942 when sparks from a chimney ignited the building's wooden shingles and flames spread to the nearby stables and carriage house. In 1976, vandals burned the 80-foot water tower. The park, acquired by the State of Missouri in 1978, also features a natural bridge, huge sinkholes, historic caves and the state's 12th largest spring. Among nearby forests are unique savanna and glade plant and animal habitats. This photo was taken on Sept. 12, 1935, by Evelyn Bishop, great-great grandmother of Melissa Adams, Columbia, who submitted the photo.**

***Send your photo to "Time Exposures," c/o Missouri Resources, P.O. Box 176, Jefferson City, MO 65102-0176. All pictures will be returned via insured mail. Pre-1970 environmental and natural resource photos from Missouri will be considered. Please try to include the date and location of the picture, a brief description and any related historic details that might be of interest to our readers.***

tic tanks or sewer systems, E. coli can cause gastrointestinal illness.

Water sample test result data are online at [www.lmvp.org/LOWA/ecoli.htm]. A link to the data can also be accessed through Lake of the Ozarks Watershed Alliance's Web site, [www.soslowa.org].

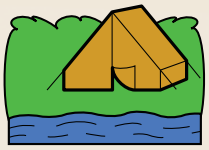

## February is Earthquake Awareness Month

Geologists and other earthquake experts meet in February to find out why and when earthquakes happen, and what you should do if the "big one" hits. The Department of Natural Resources, the State Emergency Management Agency, the Missouri Seismic Commission and others will participate in a number of events across the state throughout the month of February.

When will the next big earthquake hit? There is no way of knowing for sure. Current data show a 90 percent chance for a magnitude 6.0 or greater by the year 2040. This would impact a four to eight state region. The New Madrid Seismic Zone averages more than 200 measured earthquakes per year – about 20 per month. Tremors large enough to be felt are noted each year.

Visit the department's Web site for a list of activities planned for Earthquake Awareness Month. The site also features information about earthquakes and other geologic hazards at [www.dnr.mo.gov/geology/geosrv/geores/geohazhp.htm].

## State Parks Seeks Your Input on Future



The Missouri state park system has a proud history of more than 90 years. Now, the Missouri Department of Natural Resources is looking ahead to the second century of state parks by soliciting ideas for the next 10 years to see what challenges and trends must be met and how to meet them. As a part of this process, the department is asking the public for input on these challenges.

To meet the challenges of the park system's second century of existence beginning in 2017, the department has begun what it calls the "visioning" process. The process began with meetings and workshops with park staff and constituents brainstorming about long-range planning. Issues and ideas were collected under six main topics: staff training and expansion; funding; new or expanded facilities; programs and event expansion; diversity initiatives; and marketing and promotions. The public is asked to go online at [www.mostateparks.com/visioning.htm] and comment on ideas in each of the six categories. The Web site will remain up through March 1, 2008, and these ideas will be incorporated into the list.

*For news releases on the Web, visit [www.dnr.mo.gov/newsrel/index.html]. For a complete listing of the department's upcoming meetings, hearings and events, visit the department's online calendar at [www.dnr.mo.gov/calendar/search.do].*

## Cecil Fretwell **Watershed Pioneer**

Photo by Jim Balmer, Missouri Rural Water Association

**Cecil Fretwell**

Most people dream of a retirement filled with tee times or perhaps cross-country road trips. When Cecil Fretwell retired from the trucking industry in the early 1980s, he pursued a different kind of dream, and retirement had little to do with it. Thousands of Missourians would benefit from Fretwell's extremely long dream.

Fretwell returned home to northeast Missouri where he had spent his childhood, and soon noticed a growing need for a stable, long-term water supply for communities in the region. Fretwell took a job as a part-time manager for Monroe County Public Water / Sewer District No. 2, which quickly grew into a full-time job. After learning that the soon-to-be-constructed Mark Twain Lake was designed to serve as a drinking water supply, he worked to make it a regional water supply source.

Fretwell also worked tirelessly for the formation of the Clarence Cannon Wholesale Water Commission in 1983. He assumed the responsibility of pushing for the required legislative changes to allow formation of this landmark commission.

As chair of the CCWWC, Fretwell coordinated efforts among the Missouri Department of Natural Resources, the U.S. Army Corps of Engineers, the EPA, U.S.D.A. Rural Development and the 22 member cities and water districts that belong to the CCWWC. He also participated in four years of intense negotiation with the Corps of Engineers and sold revenue bonds on the private market to fund the gigantic project. Thanks to Fretwell's commitment and vision, the CCWWC ultimately helped negotiate and secure water rights to Mark Twain Lake. The organization also was responsible for the construction and startup of water delivery from the new water treatment plant.

"Though it was a significant and lengthy undertaking, the communities in northeast Missouri will enjoy the benefits for many generations to come," said Elizabeth Grove, general manager of the CCWWC. "By securing a stable water source for northeast Missouri, Cecil helped promote the region's economic development," Grove added.

Fretwell's efforts also helped create a roadmap for other regions facing similar challenges. The CCWWC was the first strictly wholesale water commission in the State of Missouri formed for the purpose of serving treated water to its member cities and water districts. It now serves as a model for other wholesale commissions in Missouri.

"A visitor to the area was talking to her host as they were driving around the area," Grove said. "Her host pointed out the water towers they passed and pump stations and explained how water was delivered to households and that Cecil was the 'CEO' of the group that did that. The visitor replied, 'He has changed the course of history for this area, hasn't he?' How true that is!" Fretwell served as the first chairman of the CCWWC in 1983 and continued to serve in this position until he retired — for a second time — in March 2007 at the age of 96.

## Thomas Herrmann **Engineering Clean Water**

DNR photo by Scott Myers

**Thomas Herrmann**

In 2007, Thomas Herrmann retired from 18 years of service as chairman of Missouri's Clean Water Commission.

First appointed by Gov. John Ashcroft in 1989, Herrmann served as chair of the commission under five different Missouri governors. "Tom's dedication of 18 years of volunteer service to the Clean Water Commission is unprecedented," said Water Protection Program director Ed Galbraith. "The manner in which the Clean Water Law is implemented in Missouri is due largely to his influence."

During Herrmann's 18 years on the commission, federal regulations and new challenges to Missouri water quality have required technology and state regulations to become more complex. "During Herrmann's tenure, the commission approved the most comprehensive overhaul of water quality regulations in over a decade," Galbraith said. Galbraith also referred to the development of new procedures to maintain the quality of water bodies for their existing beneficial uses, such as fishing and swimming, known as anti-degradation implementation procedure.

A registered professional engineer, Herrmann's interests and experience with water quality issues goes back to his earliest work, as a design engineer for many Missouri wastewater projects since 1950. As more rigorous regulation came with the Clean Water Act, Herrmann was particularly concerned with issues affecting the affordability of compliance for Missouri's smaller municipalities. He also worked on engineering projects during both active and reserve duty with the U.S. Army Corps of Engineers.

Among Herrmann's contributions, one that he points to with particular satisfaction, is making the regulatory process more approachable by Missouri citizens. Soon after his appointment, Herrmann became concerned about public access to commission and its work. "Too many citizens and local government representatives never had a chance to speak to the commission about their issues, or really understand how the commission and water quality regulations work," said Herrmann.

In addition to meeting in Jefferson City, the commission began holding several meetings each year in cities and towns throughout Missouri. Since then, the commission has met in cities throughout the state. "That has proved beneficial for communities and citizens to participate in commission issues. It also gave the commission a chance to personally view projects and the problems it deals with," said Herrmann. Along with greater accessibility, Herrmann also believes the commission "… has demanded accountability from the program and staff, and also from regulated parties who appeal department decisions or permit requirements," he said.

Herrmann's engineering experience and long service have made his perspective an invaluable resource for the Clean Water Commission. Resource Honor Roll recognizes this outstanding service – 18 years as a volunteer – and has learned that his dedication to Missouri water quality continues. As the commission began the transition to new leadership, as a result of Herrmann's retirement, he agreed to remain available to the board as a consultant.

# Osage Village and Towosahgy State Historic Sites

by Michael Comer and Jennifer Sieg

Remnants of American Indian life are visible in many areas of Missouri. Two such locations, which once were thriving villages, now sit quietly awaiting visitors to explore the past. Both are preserved by the Missouri Department of Natural Resources as state historic sites and feature interpretive exhibits about their former inhabitants.

## Osage Village State Historic Site

Upon arrival at Osage Village State Historic Site, visitors will initially see no more than a mowed path leading through a kiosk and up a hillside. However, a stop at the kiosk will create an image that will turn this hill of grass into a thriving Osage Indian village.

In 1719, Charles Claude du Tisne spotted a village of Osage Indians on a hill near the Osage River, the location that is now the historic site. Just prior to du Tisne's visit, the Osage Indian tribe that occupied the site had split into two groups, the Little Osage and Big Osage. The Little Osage moved north to Saline County. The Big Osage tribe remained at the site between 1715 and 1775.

Pottery, weapons and tools excavated from the site have provided information about the daily lives of the villagers. At its height of activity, this village contained between 2,000 and 3,000 people and about 200 lodges. The everyday hustle and bustle of life included planting gardens of corn, squash and beans, and hunting for bison, bear, elk and deer. They gathered fruit and fished in the nearby rivers and oxbow lakes. They spoke a language classed as one of the southern Siouan tongues related to the Quapaw of northeast Arkansas, and were very successful traders with the Europeans.

Following the excavations, the site was listed in the National Register of Historic Places in 1971.

The Department of Natural Resources acquired the site in 1984 to preserve as a state historic site.

Today, a walking trail and outdoor exhibits help visitors imagine the daily activities at this once-thriving Indian village. Various interpretive stops along the trail reveal the relationship of this site to other nearby Osage and early European sites that existed on distant hillsides.


DNR photo by Scott Myers


DNR photo by Scott Myers

**(Top) Allison Vaughn, from East Prairie, reads information about the Indian village that once thrived at this location. (Above) Temple Mound is one of six Indian mounds at Towosahgy State Historic Site.**

the main part of the town, while other houses were built outside the walls as more people migrated to the settlement.

The inhabitants of Towosahgy were town dwellers whose lifestyle differed greatly from the more nomadic plains Indians. Living in an area for extended periods of time, they relied primarily on farming for sustenance, supplemented by hunting. The town was the civic and ceremonial center for a large section of the southeast lowlands. The town's chief provided the religious and political leadership for this geographic area. There were other smaller hamlets within a short distance of the main town and the whole formed a well-developed cultural and political system.

The State of Missouri acquired the area in 1967. Today, visitors may visit what is left of the town. Six of the seven mounds still exist and surround the central plaza. Part of the palisade line has been located and marked and an informational kiosk provides visitors with a brief background of the village and its inhabitants. The site, which is open from 10 a.m. to 4 p.m. daily, is self-guided. It will give visitors a look into what was once a thriving, extensive culture found in the Missouri Bootheel and all along the Mississippi River valley hundreds of years before any white settlers made their homes there.

Towosahgy State Historic Site is located near East Prairie in Mississippi County. To get there, take the East Prairie / Matthews exit off of Interstate 55 and go east on Highway 80, then south on Highway 77 and one mile on County Road 502. The site is managed by Hunter-Dawson State Historic Site in New Madrid, which can be contacted at (573) 748-5340.

For more information about Osage Village or Towosahgy state historic sites, contact the Department of Natural Resources toll free at 1-800-334-6946 (voice) or 1-800-379-2419 (Telecommunications Device for the Deaf) or visit the Web at [www.mostateparks.com].

---

*Michael Comer is the site manager for both Hunter-Dawson and Towosahgy state historic sites. Jennifer Sieg is an information specialist with the department's Division of State Parks.*

DNR photo by Jennifer Sieg


DNR photo by Scott Myers

DNR photo by Jennifer Sieg

These stops also point out previous locations of houses and large rocks with depressions from nut cracking and grooves from sharpening tools.

While walking this trail, take time to picture horses grazing, men and women working, children playing, skins drying on the ground or on frames, and food drying on racks everywhere. The hustle and bustle common during the Osage's residence here was quite different from the peaceful setting encountered today. So, venture out of the car and back in time.

Osage Village State Historic Site is located nine miles east of Nevada on Highway 54 (near Walker), six miles north on Highway C and three miles west on a gravel road in Vernon County. The site is managed by Harry S Truman Birthplace State Historic Site in Lamar, which can be reached at (417) 682-2279.

## Towosahgy State Historic Site

An undiscovered archaeological treasure awaits those who are unfamiliar with Towosahgy State Historic Site. Located in southern Mississippi County, the 64-acre tract preserves the remains of a once-flourishing Indian community. Towosahgy, an Osage Indian word meaning "old town," is a very good example of the Mississippian culture tradition.

Towosahgy was part of a very well organized political and cultural system with extensive trade links to other Mississippian towns. Numerous villages and towns were scattered throughout the Missouri Bootheel area. The village began about 1,540 years ago and was occupied for approximately 1,000 years, although the development preserved at the site today probably took place within the last 400 years of the town's existence.

Although not readily apparent to the casual visitor, Towosahgy is located on the eastern side of Pinhook Ridge, a natural levee that protected the village from periodic Mississippi River floods. During the height of its occupation, Towosahgy consisted of about 250 to 300 houses. Seven mounds of varying size were also constructed within the settlement by the end of active human occupation. These were of earthen construction and were built in several phases, one basket load of dirt at a time. The borrow pits, where much of the dirt was obtained for these important features, are still visible at the site. The mounds surrounded a central plaza where various civic and religious ceremonies were held as well as sporting events and market activities. The inhabitants must also have feared attack from enemies and constructed a palisade for protection. The wooden walls surrounded

**(Opposite page) This banner at Osage Village State Historic Site depicts the Osage chief Tchong-tas-sab-bee, or Black Dog, who reportedly stood nearly seven feet tall, weighed 300 pounds and, according to artist George Catlin, was admired and respected by those who knew him.**
**(Above, left) At a stop on the interpretive trail at Osage Village State Historic Site, Jeremy and Brittany Sieg touch the indentations left on a large rock used by Osage Indians to crack nuts.**
**(Above) Patrick Brophy, from Nevada, Mo., studies the lives of Osage Indians at the site's kiosk.**

# Unraveling Riddles for Energy Savings

by Kerry Cordray
photographs by Scott Myers

Many of us enjoy working the occasional crossword, sudoku or jigsaw puzzle. But on most days at the office, Frank Cunningham bends his mind around puzzles of a more intricate nature.

As an energy engineer for the Department of Natural Resources' Energy Center, Cunningham uses his knowledge of energy efficiency and new technology to help determine ways to save energy costs and improve the comfort of Missouri schools, courthouses and a host of other public buildings and facilities.

Following leading edges of technology to find solutions to complicated problems always appealed to Cunningham. "I remember as a kid being fascinated with the cool new gadgets and ideas pictured in magazines like *Popular Mechanics*," said Cunningham. "Half of them were a mix of science and wild imagination, but they caught my attention and made me wonder how things could work better."

Applying study to his inclinations, Cunningham earned a degree in mechanical engineering from the University of Missouri – Columbia and worked a year for the Energy Center as an energy specialist in 1996-97. After five years away in a position as a design engineer with the Division of Design and Construction in Missouri's Office of Administration, Cunningham returned to the Energy Center in 2003 to work as an energy engineer.

A day in the life of an Energy Center engineer may include reviewing a variety of technical plans from schools and communities applying for low-interest loans for energy-saving projects. Then the phone rings with callers who have questions about any number of energy concerns.

"I deal with questions on just about every kind of energy technology," Cunningham said. "Facilities, local and state agencies and individual citizens approach us with issues on efficient lighting, insulation, heating and cooling, solar and wind power – you name it." Often, citizens are searching for grants or some kind of financial help. "I get that many times a week. Unfortunately, the only incentive programs available in the market for private homes or individuals

**Frank Cunningham checks an electrical panel at the Curatorial Building at Rock Bridge Memorial State Park. Changes that he suggested resulted in an 80 percent reduction in energy use in the new building.**

# Statewide Recognition

In 2006, electric bills ran unusually high at the new Curatorial Building at Rock Bridge Memorial State Park in Columbia. The department's Division of State Parks and the Missouri Department of Transportation share the use of the building. Staff members were stumped at the unexpected costs, and Energy Center engineer Frank Cunningham was called in to study the problem.


Studying the building's lighting, ventilation and other operations, he discovered a problem that caused heating and cooling systems to run almost constantly. The units were reprogrammed so they could turn off, cutting monthly energy bills by more than $350. Cunningham made sure that these and other energy-efficiency improvements could be made without sacrificing the comfort of workers or visitors.

Cunningham also worked on the heating, ventilation and air conditioning renovation of the department's Division of Geology and Land Survey buildings in Rolla that are now realizing major savings in energy costs. In addition to other state park facilities, he has also worked with other state agencies to identify savings for their facilities. For his efforts, he was named the department's Employee of the Month for July 2007 and the August 2007 Missouri State Employee of the Month.

**(Top) Cunningham coordinated the operation of the heating and cooling system at the Curatorial Building at Rock Bridge Memorial State Park with programmable thermostats (top right) to claim significant energy savings for heating, ventilation and air conditioning in the new building.**

right now are the federal tax credits for some energy efficiency improvements and some solar power applications," Cunningham added.

A road trip to a state-owned building can be on the to-do list, to investigate why its energy bills are running high (see sidebar). "People often think of engineers as totally immersed in numbers and practical matters [but] I enjoy the problem solving," Cunningham said.

According to Cunningham, doing this kind of job well also involves listening to a wide variety of people and helping them figure out what their real needs are. He especially likes the opportunity to work with projects while they are being designed. "Designing a building for energy savings from the ground up is the way to really do it right, rather than trying to fix problems when a building is already built."

In addition to the Energy Center's three energy engineers, the Department of Natural Resources draws on the talents of more than 130 engineers with diverse areas of specialization throughout the department. Those fields include environmental quality, field services, geology, state parks and water resources. Each position has a unique list of job duties. General qualifications for entry-level engineering positions require graduation from a college or university with a bachelor's degree in engineering. For more information, call the department at 1-800-361-4827 and ask for the Human Resources Program.

---

*Kerry Cordray is a division information officer with the department's Office of Communications.*


## Bluegrass Ridge Wind Farm

# Not Your Grandpa's Windmill

by Kerry Cordray
*Rural Missouri* photos

If a stranger asks Gentry County farmer John McKinnon these days what he raises on his land, he can honestly say his 80 acres is planted in pasture and power. To be exact, 2.1 megawatts of wind power. The 260-foot sentinel of a wind turbine standing tall over his land is surrounded by 26 other gleaming white giants spread across the 9,000 acres of the Bluegrass Ridge Wind Farm near King City.

The great blades atop the towers began turning in spring 2007, producing up to 57 megawatts of cleanly produced renewable power. On Sept. 17, 2007, more than 500 people attended the official opening of the Bluegrass Ridge farm, developed and built by the Missouri-based company Wind Capital Group, in partnership with John Deere Wind Energy.

"The Midwest, including Missouri, is the Saudi Arabia of wind power," said Jaime Steve, legislative affairs director for the American Wind Energy Association. "Right now, wind makes up 1 percent of electricity production in the country. We think we can grow that to 20 percent."

At Bluegrass Ridge, each landowner allowing a tower on his or her land receives an annual lease payment of $3,000 per turbine. "But I'd have done it regardless, for all it will do for our community and schools," said McKinnon. In the next year the wind farm will pay property taxes of more than $500,000 to Gentry County, most of which goes to the King City school district. "Besides being part of a renewable energy development, it also means a better future for our children and grandchildren," McKinnon said.

In late 2007, another 29 turbines were slated to start up on two more wind farms, near Rock Port in Atchison County. When an additional 24 turbines go online in 2008 near Conception in Nodaway County, the four facilities combined could produce enough energy to power about 45,000 homes.

Associated Electric Cooperative Inc., wholesale power supplier for six regional and 51 local rural electric coops in Missouri, southeast Iowa and northeast Oklahoma, will buy and distribute all the electricity produced by the wind farms for the next 20 years. For its involvement, AECI was named 2006 Wind Coop of the Year by the National Rural Electric Cooperative Association and the U.S. Department of Energy.

The Missouri Department of Natural Resources' Energy Center helped plant seeds that grew into these wind energy developments, commissioning studies in 2003 to produce updated state wind resource maps, with financial assistance from the U.S. Department of Energy ("Rediscovering the Wind," *Missouri Resources*, Fall 2004). Wind Capital Group used the improved resource maps to help locate areas with winds most likely to be productive for utility-sized wind turbines.

For more information about Missouri's wind resources, including wind resource maps, visit the Energy Center's Web page at [www.dnr.mo.gov/energy/renewables/wind-energy.htm].

---

*Kerry Cordray is a division information officer with the department's Office of Communications.*


**MISSOURI DEPARTMENT OF NATURAL RESOURCES**
P.O. Box 176
Jefferson City, MO 65102-0176

PRST STD
U.S. Postage
PAID
Permit No. 225
Liberty, MO
64068